



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7**

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SEP 16 2015

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Article No.: 7002 0860 0006 5967 8408

Ms. Cheri T. Holley
DICO
2345 East Market Street
Des Moines, Iowa 50317

Re: NOTICE OF DISAPPROVAL
Administrative Order, Docket No. 86-F0011
DICO's Performance Evaluation Report No. 29, Groundwater Extraction and Treatment System,
Des Moines TCE Site, Des Moines, Iowa

Dear Ms. Holley:

The U.S. Environmental Protection Agency received DICO's Performance Evaluation Report No. 29 (Report) on July 31, 2015. The EPA has reviewed the Report and disapproves of the document in accordance with paragraph 36 of the above-referenced Administrative Order.

Enclosed with this letter are the EPA's comments to the Report and the reasons the EPA cannot approve this document. Please note that while the EPA's attached comments reference specific sections of the Report, the comments are applicable to the entire Report. In accordance with paragraph 36 of the above-referenced Administrative Order, DICO must submit a revised report within thirty days of receipt of this notice that addresses each of the comments to the satisfaction of the EPA.

If you have any questions concerning this matter or wish to discuss the actions necessary to revise the Performance Evaluation Report, please contact me at (913) 551-7454.

Sincerely,

Sandeep Mehta
Remedial Project Manager
Iowa/Nebraska Remedial Branch
Superfund Division

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Superfund

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EPA Review Comments
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DICO, Des Moines, Iowa
September 2015

Comment No.	Page/ Section/ Paragraph	Comment
1	Page 2, Section 1, Paragraph 1	<p>The text indicates that this report, in part, is intended to support Responsible Party claims that the system has been very effective in the past and reached a stage where it can be eliminated and replaced with natural attenuation. TCE concentrations, while variable, do not indicate declining influent concentrations. Influent TCE concentrations in 2014 ranged from 220 µg/L to 800 µg/L, averaging 455 µg/L. Over the past five years, influent TCE concentrations have averaged from 284.2 µg/L to 486.7 µg/L. Influent concentrations at extraction wells ERW-6 or ERW-07 averaged 526 µg/L in April and 470 µg/L during the October sampling events. As groundwater is drawn to the recovery wells from 360°, TCE concentrations at the source of these detections may be much higher. There appears to be a persistent source of impacts to groundwater (residual NAPL/ganglia) at OU1. DICO's groundwater monitoring results demonstrate the hydraulic containment provided by the continued operation of the Pump & Treat system is necessary to restrict plume migration to other areas. As indicated in the Fifth Five-Year Review Report, deteriorating conditions were noted in various areas of the asphalt cap; with continued deterioration, more infiltration shall occur and the potential for soil source material to impact groundwater will increase. Thus, DICO's groundwater monitoring results demonstrate the hydraulic containment provided by the continued operation of the extraction system is necessary to restrict plume migration to other areas, as required by the Administrative Order.</p> <p>Therefore, the EPA strongly disagrees with DICO's assertion that "...the system ... has reached a stage where it can be eliminated and replaced with natural attenuation". The EPA has communicated its position to DICO repeatedly through comments provided on past Performance Evaluation Reports. DICO must correct the report, to read as follows: "This report is intended to document and reflect the operation and performance of the groundwater extraction system over the past year of operation with supporting figures and tables."</p>
2	Page 3, Section 2.3, Paragraph 1	<p>The text notes the range of TVOC concentrations for 2014 rather than the TCE range at 220 µg/L – 800 µg/L. Please correct the text accordingly.</p> <p>In addition, the narrative references various contaminant concentrations in mg/L units. The analytical results and graphs in the appendices report results in µg/L units. Please change the narrative to reflect the results in µg/L for consistency. Please note that the correction for the units are applicable to the entire Report.</p>
3	Page 4, Section 3.0, Paragraph 1, Sentence 2	<p>The text indicates that hydraulic head measurements suggest a groundwater capture width of roughly 100 feet. As depicted in Figure 11, monitoring wells are about 90 feet to 120 feet from the extraction wells. The use of water levels from the extraction wells, due to well inefficiencies, is not appropriate for estimating the extent of the</p>

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		capture zone. Installation of piezometers within 10 feet to 15 feet of the extraction wells would provide representative water levels under a pumping scenario to adequately evaluate the capture zone. DICO is requested to submit work plans to install the piezometers and provide a scientific basis for the determination of the groundwater capture width. If DICO does not wish to do so, please delete the text suggesting the groundwater capture width from the document and re-submit for EPA approval.
4	Page 5, Section 3.0, Paragraph 1	There appears to be a discrepancy in the section and Figure 11. The text indicates that recovery wells ERW 5 – 7 induce recharge from the Raccoon River to the alluvial aquifer. The increase in hydrostatic pressure from the spillway flash boards, as indicated in Paragraph 2, also induces recharge on the east side of the river. The apparent groundwater low in the area of piezometer P-2 follows the hydraulic gradient depicted on each of the Figure 11 groundwater flow maps. The equipotential lines that depict a depression in this area are not based on static water level data. The January Groundwater Flow Map, Figure 11, depicts well NW-12 with a cone of depression. Please review and revise this figure.
5	Page 5, Section 3.0, Paragraph 2	The EPA concurs that the river will lose water to the aquifer due to the spillway flashboards increasing hydrostatic pressure. This is borne out by the river stage being consistently above the groundwater elevations at OU1. However, the Feasibility Study report from 1986 shows a significant difference in hydraulic conductivity exists between the river bed and alluvial sediments. This hydraulic conductivity difference may affect the rate of recharge to the aquifer. If the southern gallery is used, despite the closure of the valves, groundwater is apparently pulled through the northern gallery. Should an extraction well(s) closure scenario be evaluated, additional piezometers would be needed to determine groundwater flow paths affected by induced recharge due to the hydrostatic pressure and use of the southern gallery. Therefore, by losing water to the groundwater system, the likelihood of contaminants migrating toward the river is not completely eliminated. Please correct the statement accordingly.
6	Section 5.0	Please delete the word “minimal” in the last sentence of the paragraph and replace it with the actual concentration results from sampling manhole MH-1N.
7	Page 6, Conclusions, Paragraph 1	Influent TCE concentrations have been consistently detected above cleanup levels. See comment #1. There appears to be a persistent source of impacts to groundwater. Source material may remain beneath the former degreaser vats and former drum cleaning area in the vadose zone/capillary fringe (creating a smear zone) and/or within the fractured bedrock. Monitored Natural Attenuation (MNA) will not be effective unless source(s) control is a component of this remedy. The EPA does not recommend the shut-down and decommissioning of the

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		existing Pump & Treat system until it can be demonstrated by DICO that MNA will be effective in reducing contaminant impacts to groundwater in a reasonable timeframe and all sources of groundwater contamination have been addressed. Please also refer to the EPA's response dated October 23, 2010 to EME's July 15, 2010 correspondence.
8	Various references throughout the document	<p>DICO report indicates "the recovery wells have effectively limited the off-site migration of the dissolved phase constituents", recommending "natural attenuation as appropriate remedial option". This has been identified as the solution to the existing "practically and financially non-feasible" onsite groundwater treatment system. DICO has not provided any groundwater modeling, pump test data or other technical information to support this conclusion. In addition, the City of Des Moines is still contemplating use of the northern gallery for drinking water source.</p> <p>As indicated in the Fifth Five-Year Review Report and as detailed in the EPA's response dated October 23, 2010, there may be potential opportunities for optimization, which could, among other alternative remedies, include implementation of an alternative hydraulic containment or source area treatment technologies. The use of monitored natural attenuation may be considered one of the alternatives of achieving remediation objectives. According to OSWER's Directive 9200.4-17P "Use of Monitored Natural Attenuation at Superfund Site, RCRA Corrective Action, and Underground Storage tank Sites", the EPA expects source control and long-term monitoring should be components of that remedy. The Fifth Five-Year Review Report inferred that inhibiting infiltration at the site through adequate asphalt maintenance may decrease potential impacts to groundwater. Institutional Controls implementation should also be a component of a proposed MNA remedy.</p> <p>Supporting information shall be required to demonstrate the efficacy of MNA. The demonstration would need to include a quantitative understanding of source mass through further site characterization, post Pump & Treat demonstration of continued plume stability, post- Pump & Treat groundwater flow pathway evaluation, and a determination that evaluates natural attenuation processes (e.g. – hydrogeological, geochemical and biological variables) are occurring at an acceptable rate to meet site remedial goals in a reasonably timely manner. Additional documents for review in consideration of an MNA approach include the following: EPA/600/R-98/128 "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents", September 1998; EPA/600/R-04/027 "Performance Monitoring of MNA Remedies for VOCs in Ground Water", April 2004; "Site Characterization for MNA of VOCs in Ground Water", November 2009; and, EPA/600/R-11/204 "An Approach for Evaluating the Progress of Natural Attenuation in Groundwater", December 2011.</p>

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		The EPA has repeatedly indicated its willingness to consider modifying the existing remedy or evaluating an alternative remedy. The alternative remedies for the contaminated groundwater should be based on sound scientific study and in keeping with the process outlined in the National Contingency Plan to modify the existing remedy. As previously communicated by the EPA to DICO, until such time as the current remedy is modified by amending the Record of Decision and, the 1986 UAO is amended or replaced with a new order addressing the revised remedy, the groundwater extraction and treatment system must continue to operate. Please correct the document and re-submit the report for EPA approval.

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